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16. Abstract

A 1992 report to Congress, pursuant to Intermodal Surface Transportation Efficiency Act (ISTEA) sections 1089 and 6015, acknowledges that Texas serves a disproportionate share of the U.S-Mexico international trade. Accordingly, it recommends the development of federal-aid program options to improve transportation infrastructure related to international trade. In order to take advantage of this recommendation, border states must monitor their transborder traffic demand and develop traffic circulation plans for their border cities. This report summarizes international traffic issues identified during the development of traffic circulation and long-range plans for the cities of Del Rio and Eagle Pass, Texas. The study included an analysis of transborder traffic in Del Rio and Eagle Pass, as well as international thoroughfares between Del Rio/Ciudad Acuña and Eagle Pass/Piedras Negras. The recommendations take into account input from TxDOT personnel, city officials, border inspectors, international bridge managers, and several Mexican officials. This document can help ensure that TxDOT land transport infrastructure planning is in concert with that of relevant agencies on both sides of the border.

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INTERNATIONAL TRAFFIC CIRCULATION IN DEL RIO AND EAGLE PASS: EXECUTIVE SUMMARY

by
Angela Jannini Weissmann

Research Report Number 2940-3F

Research Project 7-2940
Traffic Circulation Study and Long-Range Plan for Del Rio and Eagle Pass

conducted for the

Texas Department of Transportation

by the

CENTER FOR TRANSPORTATION RESEARCH
Bureau of Engineering Research
THE UNIVERSITY OF TEXAS AT AUSTIN

March 1996

IMPLEMENTATION STATEMENT

This report summarizes international traffic issues identified during the development of a traffic circulation and long-range (1995 to 2020) plan for the cities of Del Rio and Eagle Pass, Texas. These plans include recommendations for roadway capacity increases, left turn lanes, new routes to relieve congestion, and international thoroughfares. These elements are discussed in the previous reports of this study (2940-1 for Eagle Pass, and 2940-2 for Del Rio). Successful implementation of an urban traffic circulation plan for a border city requires interagency cooperation at an international level. This summary report provides TxDOT with an understanding of international traffic issues relevant to Del Rio and Eagle Pass. The recommendations and schedules discussed in this report can assist TxDOT in ensuring that its international transportation infrastructure planning is in concert with that of relevant agencies on both sides of the border.

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Prepared in cooperation with the Texas Department of Transportation.

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SUMMARY

A 1992 report to Congress, pursuant to Intermodal Surface Transportation Efficiency Act (ISTEA) sections 1089 and 6015, acknowledges that Texas serves a disproportionate share of the U.S-Mexico international trade. Accordingly, it recommends the development of federal-aid program options to improve transportation infrastructure related to international trade. In order to take advantage of this recommendation, border states must monitor their transborder traffic demand and develop traffic circulation plans for their border cities. This report summarizes international traffic issues identified during the development of traffic circulation and long-range plans for the cities of Del Rio and Eagle Pass, Texas. The study included an analysis of transborder traffic in Del Rio and Eagle Pass, as well as international thoroughfares between Del Rio/Ciudad Acuña and Eagle Pass/Piedras Negras. The recommendations take into account input from TxDOT personnel, city officials, border inspectors, international bridge managers, and several Mexican officials. This document can help ensure that TxDOT land transport infrastructure planning is in concert with that of relevant agencies on both sides of the border.

INTERNATIONAL TRAFFIC CIRCULATION IN DEL RIO AND EAGLE PASS:

EXECUTIVE SUMMARY

In providing incentives for increased trade among the U.S., Canada, and Mexico, the North American Free Trade Agreement (NAFTA) could considerably liberalize freight carriage across these countries' respective borders. And while Texas has a substantial economic interest in the increased trade, its border cities, the conduits through which much of the international traffic moves, are, as a result, experiencing increased congestion, greater safety hazards, and worsening air quality.

Indeed, a 1992 report to Congress, pursuant to Intermodal Surface Transportation Efficiency Act (ISTEA) sections 1089 and 6015, acknowledges that Texas serves a disproportionate share of the U.S-Mexico international trade; accordingly, it recommends the development of federal-aid program options to improve transportation infrastructure related to international trade (Ref 3). However, in order to take advantage of this recommendation, border states must monitor their transborder traffic demand and must develop traffic circulation plans for their border cities.

This report summarizes the international traffic issues identified during the development of a traffic circulation and 25-year plan for the cities of Del Rio and Eagle Pass, Texas. These plans were initially discussed in two previous reports: Report 2040-1 for Eagle Pass, and Report 2940-2 for Del Rio. Because successful implementation of an urban traffic circulation plan for a border city requires interagency cooperation at an international level, this executive summary provides the Texas Department of Transportation (TxDOT) with a bilingual briefing regarding international traffic issues relevant to Del Rio and Eagle Pass.

This executive summary is organized into two parts: Eagle Pass/Piedras Negras traffic circulation, and Del Rio/Ciudad Acuña traffic circulation. Each section discusses growth rates, NAFTA impacts, peso devaluation impacts, current and future routes, and future bridge locations. As arranged in this report, all discussion common to Eagle Pass and Del Rio appears in both sections, so that a reader interested in only one pair of sister cites will find all relevant information within the pertinent section. The issues and recommendations discussed in this report can assist TxDOT in its efforts to ensure that its international transport infrastructure planning is in concert with that of relevant agencies on both sides of the border.

PART I: EAGLE PASS / PIEDRAS NEGRAS TRAFFIC CIRCULATION

The combined Eagle Pass/Piedras Negras area includes nearly 130,000 inhabitants. On the U.S. side, Eagle Pass, Texas, is a city of only 30,000, while Piedras Negras, an important municipality in the state of Coahuila, claims a population of around 100,000 — about 5 percent of Coahuila's total population. The two cities are linked by two international bridges, one vehicular and one rail.

International Traffic Growth

A 12-year analysis of international traffic (1980 to 1992) showed that pre-NAFTA traffic growth rates were somewhat sluggish. On average, the yearly growth rates for autos, trucks, and pedestrians were, respectively, 0.08 percent, 0.01 percent, and 4.3 percent for northbound traffic, and 1.57 percent, 3.82 percent, and -5.36 percent for southbound traffic. In particular, the auto growth rates were consistent with the fact that the population growth for Eagle Pass had been negative (-3.5 percent) from 1980 to 1990. The population of Piedras Negras, on the other hand, increased by 72 percent from 1970 to 1980, and 22.3 percent from 1980 to 1990. According to Mexican officials, population growth in Piedras Negras was triggered by federal investments in the energy and mining sectors, as well as by the maquiladora industry. The number of maquiladoras in Piedras Negras grew 147 percent between 1982 and 1992, while the number of maquiladora employees grew 280 percent. As a result, a considerable portion of the international rail traffic in Eagle Pass derives from automotive maquiladoras located in the Saltillo area.[1] However, rail traffic has increased only slightly over the past 10 years.

The immediate post-NAFTA period saw a dramatic increase in these traffic growth rates. For the 1993–1994 period, auto traffic grew 3 times faster than that between 1982 and 1992: 1.4 percent in the northbound direction and 2.2 percent in the southbound direction. For trucks, the growth rate was 5 times higher than the 1982-1992 average (23 percent in the northbound direction and almost 10 percent in the southbound direction). The most recent study on borderwide traffic growth trends following NAFTA's passage found that Eagle Pass had the highest northbound truck growth rate of all border sectors, and the fourth highest in the southbound direction. Auto growth, while less impressive, was still much higher than the pre-NAFTA average. These rankings exclude Los Indios, a new bridge whose growth rates reflect traffic development at a new facility, rather than a corresponding increase in transborder demand (Ref 13).

Yet while the positive impacts of NAFTA served to bolster traffic in this area early on, those growth rates have recently faltered in the wake of the December 1994 peso devaluation. Thus, based on data from Caminos y Puentes Federales (CAPUFE), for the first four months of 1995 auto traffic decreased 3.5 percent, truck traffic decreased 5.1 percent, and total vehicles decreased 3.6 percent (U.S. Customs data indicate even greater decreases). Also for the first three months of 1995, Customs data indicate that auto traffic decreased 7 percent and truck traffic

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[1]Information provided by Mr. Noé Garcia, P.E. in Mexico, president of Ingeniería Gario, and project manager of CTR's subcontracted portion of this project.

decreased over 10 percent, for an overall decrease of 6.7 percent. Interviews with Eagle Pass officials confirm the negative impacts of the peso devaluation in international traffic demand.

With respect to rail, the peso devaluation seemingly had little effect. In fact, northbound rail traffic grew 4.2 percent from 1993 to 1994, increasing from 14,571 to 15,177 cars. In the southbound direction, there were 17,171 cars in 1993 and 18,818 in 1994, a 9.6 percent increase. In January, February, and March of 1995, the accumulated number of rail cars was 8,322 in 1994 and 10,564 in 1995, an almost 30 percent increase with respect to 1994.

Origins and Destinations of International Traffic

The only origin and destination (O&D) survey available for Eagle Pass was conducted by the Center for Transportation Research (CTR) of The University of Texas at Austin for a regional transportation planning study (Ref 11). This survey, conducted in 1993 at the southbound bridge access, included 483 autos and 15 trucks (about 35 percent of the AADT). Information gathered consisted of O&D disaggregated by Texas and Mexican cities, trip frequency, trip purpose, and state where the vehicle was licensed.

The survey results indicated that over 80 percent of the auto trips and 60 percent of the truck trips were made from Eagle Pass to Piedras Negras, and 90 percent of the auto and truck trips had at least one local origin or destination (Eagle Pass or Piedras Negras). Only 10 percent of the trips had both origin and destination beyond the two sister cities. The second most frequent origin was San Antonio (18 trips observed), while the second most frequent destination was Rio Escondido (7 trips observed).

Average auto occupancy rates were 1.42 and 1.93 for business and non-business auto trips, respectively. Over 60 percent of auto respondents indicated non-business trip purposes, while 38 percent indicated business-related trips (some respondents refused to answer). Non-business trips included shopping trips and trips to or from schools. Over 56 percent of all auto plates were from Texas, while 37 percent were from Coahuila (both states are linked by the Eagle Pass Bridge). For trucks, there were 12 (80 percent) Texas plates, 2 (13 percent) Mexico City plates, and 1 (7 percent) Coahuila plate. Owing to the small truck sample size, these latter truck percentages are not statistically significant.

Over 80 percent of the non-business trips were undertaken either fewer than three times a week or seven or more times a week, while over 40 percent of all business trips were undertaken seven or more times a week; less than 30 percent were made fewer than three times a week. The non-business trip frequencies included various school and personal trips, while the daily or more business-trip frequency indicated possible commuters. Over 50 percent of the trucks made seven or more trips per week, a figure that reflects the drayage companies' practice of conveying cargo from one side of the border to the other — a practice established as a result of the prohibition of foreign trucks beyond the commercial zone of both countries. Because this prohibition has been dropped since NAFTA's passage, any extrapolation of truck O&D results obtained from a pre-NAFTA survey may no longer be valid.

International Thoroughfares and New International Bridges

The Eagle Pass/Piedras Negras area contains one vehicular bridge and one rail bridge. The rail bridge, owned by Southern Pacific, is located approximately 1 km downstream from the Eagle Pass Bridge. The vehicular bridge is a two-lane facility owned by the City of Eagle Pass and by the Mexican Government. It is open 24-hours a day, seven days a week, and is a toll facility with three southbound toll booth lanes. The U.S. border station has two commercial primary inspection lanes. As for the other facilities, a 1991 expansion included:

(1) increasing the existing 10-truck dock to a 25-truck dock, expandable to 50;
(2) expanding the automobile inspection to 5 primary inspection lanes and 20 secondary inspection lanes; and
(3) upgrading the administration building.

On the Mexican side, the number of Customs' primary inspection lanes for privately owned vehicles (POVs) was recently expanded from three to four, and a primary inspection lane built exclusively for trucks was added. There are approximately 10 parking spaces for autos' secondary inspection, which are basically on the streets adjacent to the bridge. For trucks, there are approximately 12 to 15 parking spaces where the documents for random selection are presented, plus an import lot for secondary inspection.

According to field observations, interviews in Eagle Pass, information from our Mexican consultant, and data collected in other studies, the main thoroughfares for the international traffic are Main Street, US 57, FM 375, FM 1021, Loop 431, and Industrial Park Boulevard. Garrison Street, an important commercial hub in downtown Eagle Pass, is a mandatory truck and auto route. In addition, many trucks currently use Monroe and Adams Streets, passing such sensitive locations as residential areas, elementary schools, and parks. The US 57 highway serves as the principal thoroughfare, primarily because it provides access to the international bridge. And FM 375 provides access to the Mall de las Aguilas and to commercial areas along Main Street; consequently, it carries much international auto traffic. The main access to Eagle Pass from Del Rio is Loop 431, while US 57 links Eagle Pass to San Antonio. Figure 1 depicts the current and proposed international trucks routes.

City officials from Eagle Pass and Piedras Negras have been lobbying for a second bridge for several years. According to the officials, the bridge is necessary (1) to relieve traffic congestion on the approaches to the existing bridge in Piedras Negras, (2) to provide right-of-way to expand these approach facilities, and (3) to provide another truck route within Eagle Pass. On the Mexican side, the concession for the proposed bridge was actually granted, the right-of-way acquired, and the design completed (Ref 5). On the U.S. side, a preliminary engineering study and traffic circulation plan, along with an environmental assessment, have been completed (Refs 8, 9). The new bridge location has been decided, and although both the new truck route alignment and detailed design may change, the new truck route will emerge from the new bridge and will meet FM 1021 at its intersection with FM 375 (South Bibb Avenue). The route will have four lanes and

an exclusive left-turn lane. The general location of the new bridge and truck route is shown in Figure 1.

Maverick County officials have expressed interest in constructing a third bridge north of the city limits at the intersection of Loop 431 and US 277 business. This location is recommended as the most convenient for Eagle Pass, given all the assumptions regarding its future development. But the priorities are different on the Mexican side. Currently, Piedras Negras' preferred site for a third bridge is about 10 km south of the existing bridge, linking to a proposed loop around the southern part of Piedras Negras. The City of Eagle Pass feels it is premature to discuss a third bridge location, since it expects the second bridge to serve traffic for another 20 years. In Piedras Negras, preliminary locations of the third and fourth bridges appear in development plans published in 1992 (Ref 2).

Discussion and Recommendations

Commercial traffic growth must be interpreted cautiously, especially in terms of discrepancies between traffic directions. For example, origin and destination surveys conducted before NAFTA already indicated that the percentage of non-local traffic was higher for trucks than for autos, but actual origins and destinations of truck traffic on each bridge are still difficult to define with reasonable accuracy (Refs 3, 10, 12, 13). Moreover, although a considerable portion of local truck traffic still reflects pre-NAFTA regulations prohibiting foreign trucks beyond the commercial zone within both the U.S. and Mexico, there is anecdotal information regarding increasing tendencies to take advantage of the more efficient new rules. Further analyses of truck traffic at the border are needed for efficient transportation planning; thus, careful monitoring of this traffic and periodical analyses are recommended.

Results of the 1994-1995 growth analyses could ordinarily be used to assess the effects of the peso devaluation. However, there are only four months' worth of data, and it is important to keep in mind that extrapolation of early trends to the entire year may result in misleading conclusions that reflect exactly the opposite of the actual yearly growth (even so, interviews in Eagle Pass and Piedras Negras indicated an overall negative impact of the peso devaluation on transborder traffic). Early peso devaluation impacts may reverse later, and more data as well as further analyses are needed to draw confident conclusions regarding the peso's devaluation.

The data indicate that NAFTA and the peso devaluation, taken together, have the potential to substantially affect transborder traffic demand. However, any study attempting to identify causal forces must keep in mind Hume's refutation of "necessary connection," that one event following another does not necessarily imply a cause-and-effect relationship. Furthermore, NAFTA is a relatively recent event, with the peso devaluation an even more recent development. Yet, interpreted as interrelated phenomena, both have the potential to dramatically change the export-import patterns. Further studies are necessary and periodic data monitoring is recommended in order to determine exactly how NAFTA and the peso devaluation affect transborder traffic.

As for international thoroughfares within the Eagle Pass, a city ordinance prohibiting truck traffic on the old bridge once the new one is open would improve traffic in the downtown area. Traffic flowing through Main Street, Garrison, Monroe, and other areas that have residential and

commercial uses would also be improved. If the city does not prohibit trucks on the old bridge, the current truck routes will still be used, and FM 3443, the proposed truck route, and the section of FM 1021 east of FM 3443 will also become international truck thoroughfares. Because the Eagle Pass outer loop (proposed in the traffic circulation plan; Ref 15) should serve international traffic, its route should be planned in concert with the hotly debated third international bridge location.

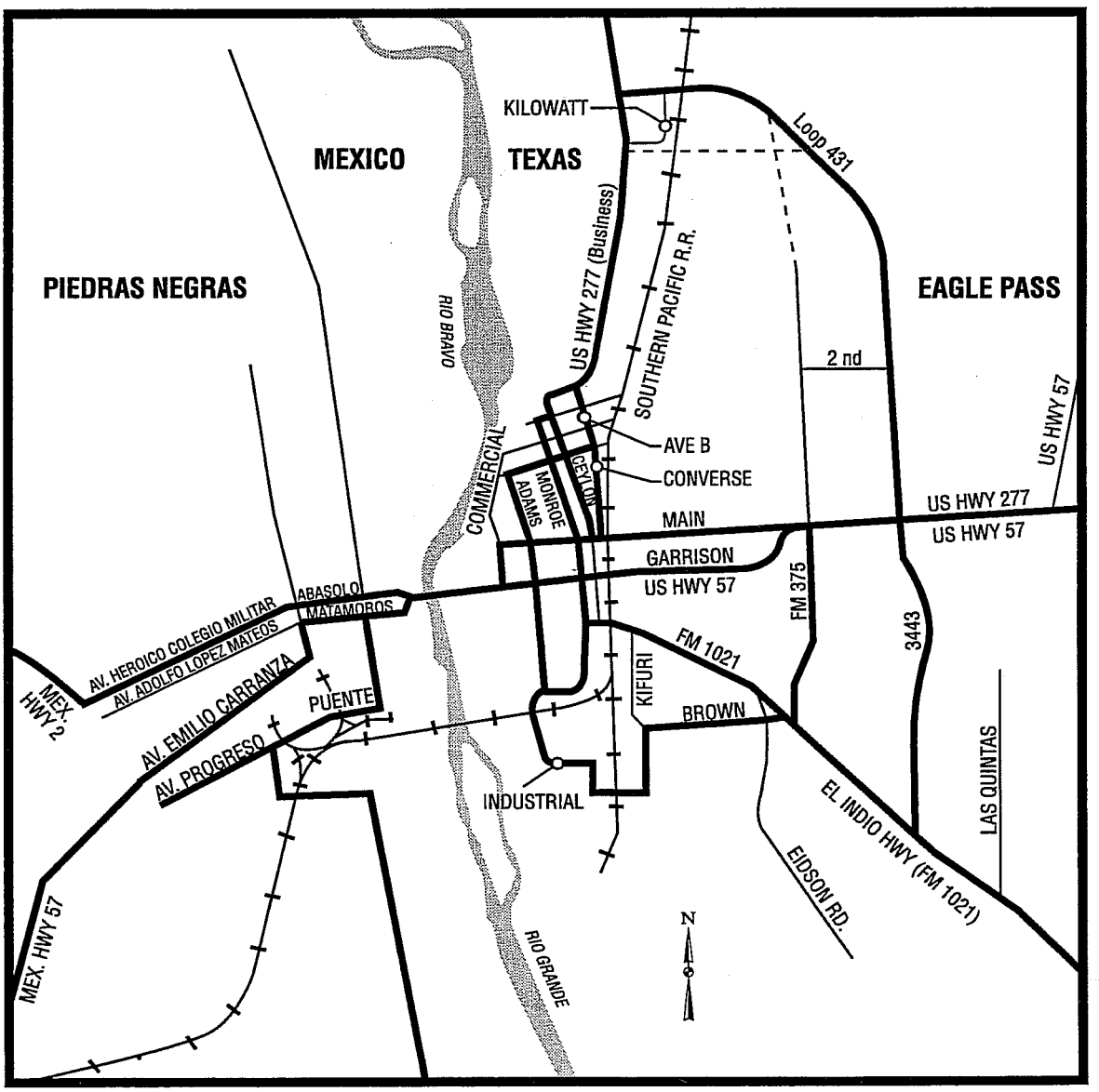

Figure 1. Eagle Pass/Piedras Negras international thoroughfares

PART II: DEL RIO / CIUDAD ACUÑA TRAFFIC CIRCULATION

The Del Rio/Ciudad Acuña area comprises the city limits of Del Rio in Val Verde County, Texas, and the urban area of Ciudad Acuña, Coahuila. It has a total population of about 140,000, with Del Rio claiming a population of approximately 35,000. Ciudad Acuña, with its estimated 115,000 inhabitants,[2] is an important Mexican municipality in the state of Coahuila. The two cities are linked by the Del Rio Bridge and by the Lake Amistad Dam crossing. The Del Rio Bridge is located approximately 105 km northwest of Eagle Pass, while Amistad Dam is located approximately 21 km northwest of the Del Rio Bridge.

International Traffic Growth

A 12-year analysis of international traffic (1980–1992) showed significant differences in auto and truck traffic growth rates over this period. Before 1987, northbound auto traffic had an erratic growth pattern, with an average yearly rate of 2.5 percent. After 1987, a more consistent growth pattern emerged, one showing a yearly average of 4.2 percent. Auto traffic grows significantly after 1988, when the average growth rate jumped from a negative figure to almost 10 percent a year. In 1991, the growth rate declined.

For truck traffic, these patterns are reversed. Before 1987, traffic growth fluctuated somewhat consistently around 19 percent. After 1987, the average growth rate jumps to 26 percent between 1983 and 1986, and to 40 percent between 1987 and 1990. Before 1983, however, there was a negative growth rate of 28 percent. After 1991, it stabilized in the neighborhood of 4 percent. Bus traffic has been stagnant throughout the available data period.

The somewhat sudden traffic increase observed after 1987 in Del Rio can be ascribed to a combination of causes. In 1986 GATT took effect, which led to a borderwide increase in economic activity and, thus, to an increase in traffic. Also, the number of maquiladoras in Ciudad Acuña increased from 26 in 1986 to 35 in 1988, while the number of maquiladora employees increased almost 40 percent over the same two-year period. Maquiladora activity has been steadily increasing since then, but at slower rates.[2] International traffic rates grew after 1988, the year the new four-lane Del Rio Bridge opened (this increase possibly reflects a latent demand not being met by the old facility).

NAFTA's implementation does not seem to have significantly altered recent growth patterns. Between 1993 and 1994, auto traffic grew almost 6 percent in the northbound direction, and over 4 percent in the southbound direction. For the first three months after the devaluation, auto traffic increased only 3 percent, with respect to the same months for 1994. Truck traffic data seem rather erratic, exhibiting 10 percent growth in the northbound direction, and a 3.3 percent decrease in the southbound direction. In the northbound direction, the peso devaluation did not reverse the growth trends, at least for the first four months of 1995. Rather, 1995 truck traffic increased over 16 percent. The Customs Port Director, along with members of the Del Rio

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[2]Information provided by Mr. Noé Garcia, P.E. in Mexico, president of Ingeniería Gario, and project manager of CTR's subcontracted portion of this project.

Chamber of Commerce, reported that the peso devaluation did not significantly impact Del Rio because, first, the city's economy depends more on U.S. than on Mexican tourism, and, second, because the Del Rio port of entry serves the maquiladoras in Ciudad Acuña, whose sales were not affected by the devaluation (this latter was confirmed by two maquiladora managers in Ciudad Acuña, who indicated that the demand for their products increased after the peso devaluation, which rendered their prices more competitive).

Origins and Destinations of International Traffic

The only origin and destination (O&D) survey available for Del Rio was conducted by CTR for a borderwide transportation planning study (Ref 11). Data were collected during a 13-hour-long survey conducted on April 29, 1993, from 6:00 a.m. to 7:00 p.m., at the southbound bridge access. The sample included 859 vehicles, or about 30 percent of the April ADT at the bridge. Information gathered consisted of O&D disaggregated by Texas and Mexican cities, trip frequency, and trip purpose.

The results indicated that the vast majority of international trips at the Del Rio International Bridge are local: 94 percent of all trips have their origin in Del Rio and their destination in Ciudad Acuña, and 96 percent or more have at least one local origin or destination (Del Rio or Ciudad Acuña). Only 1.1 percent of the trips had both origins and destinations beyond the sister cities. San Antonio was the second most frequent origin (five instances), while Piedras Negras and Zaragosa were the second most frequent destinations (three instances each).

About 34 percent of auto trip frequencies were given as fewer than three times a week, while about the same percentage uses the bridge six times a week or more. As for trucks, over half of all trips are made at least once a day, reflecting both maquiladora commerce and the activities of the drayage companies operating within the commercial zone enforced before NAFTA. Auto occupancy is slightly over 2 for non-business trips, and under 1.5 for business-related trips. Trip purpose is almost equally split between business and non-business trips.

The majority of business trips apparently relate to the commuting of Del Rio residents working at Ciudad Acuña's maquiladoras. A significant number of non-business trips were related to personal activities, such as school, visits to relatives, medical appointments, and shopping. The Del Rio O&D survey was part of a borderwide study that included most of the other bridges along the Texas-Mexico border. In most of those cases, the trip purpose response was split at approximately 70 percent and 30 percent between non-business and business. In Del Rio, these percentages were equally split between the two purposes. During the morning peak, carpools were observed carrying both white-collar and blue-collar workers to Ciudad Acuña's maquiladoras. This phenomenon, not observed with the same intensity elsewhere on the border, may explain the higher number of business-related trips in Del Rio.

Existing Border Crossings

In 1988, the old Del Rio Bridge was replaced with a new, four-lane toll bridge, one owned by the City of Del Rio (U.S. side) and by the Mexican government. Soon after, when the U.S Customs facilities became congested, the General Services Administration (GSA) bought a

218,000 m^2 lot to implement a multiphase project to upgrade the inspection facilities. In the first phase, GSA expanded the administration building. In the second phase, the GSA will build a 15-dock import lot (expandable to 100), which is now scheduled to open in 1998. This import lot will have a warehouse, a chemical waste containment set, and scales to weigh trucks. Currently, U.S. Customs is using a temporary seven-dock lot that opened in May 1995. There is also a five-truck export lot for shipment declarations (given NAFTA rules of origin of product components, Customs officials expect an increase in inspections of exports). In the third phase of GSA's master plan, which will not be implemented until the year 2010, the agency will build a new border station facility and will require the relocation of part of Rio Grande Road. GSA's capacity model predicts that the new lot will adequately handle all inspections up to the year 2010 (Refs 4, 13).

The City of Del Rio has recently improved its toll plaza. Now with four automated toll booths (with automatic vehicle identification, or AVI), the toll plaza has increased international traffic circulation. City officials believe that the improvements in U.S. Customs operations and toll collection will allow acceptable levels of international traffic for at least another 5 years.

On the Mexican side, the Puente Internacional de Ciudad Acuña has three primary inspection booths, two for autos and one for trucks. There are also for autos six secondary inspection lanes, capable of inspecting eighteen vehicles simultaneously. The import can accommodate approximately ten trucks at one time. The northbound toll facilities, operated by CAPUFE, consist of two toll booths for autos, trucks, and pedestrians. There are no plans to expand Mexican Customs on the Mexican side.

Despite Ciudad Acuña's access/egress inadequacy and its understaffed inspection facilities, we did not observe significant congestion at the international bridge. We did, however, observe that a Mexican flag ceremony, which takes place every day at 6:00 p.m. and for which all traffic is halted for about 10 minutes, tended to slow international traffic.

The other binational border crossing, at Amistad Dam, was built in 1969. Consisting of a two-lane road over a dam structure, Amistad Dam is jointly owned by the U.S. and Mexican governments. Although it is a toll-free facility, the crossing does not carry much traffic (AADT below 100) and, in fact, is used almost exclusively as a tourist attraction.

Proposed Border Crossings

Despite there being a rail line in Del Rio and another in Acuña, there is no rail bridge connecting the two cities. Consequently, all international rail travel must be routed through Eagle Pass. And while a rail bridge connecting both rail line spurs in Del Rio and in Ciudad Acuña was proposed to Southern Pacific Railroad, officials for the railroad held firm that the existing rail bridge in Eagle Pass/Piedras Negras was sufficient (Ref 5). Nevertheless, Ciudad Acuña officials continue to lobby for a new rail bridge (the city recently took its case to the XVII Binational Meeting on Bridges and Border Crossings; Ref 7).

Business leaders, Del Rio city officials, and Val Verde County officials have expressed interest in a second bridge at Del Rio. One preliminary proposal was to construct a commercial truck-only bridge near Amistad Dam. Opponents of this proposed bridge argue that the existing bridge in Del Rio is too recent (1988), and that the new bridge would make it more difficult to pay

off the existing bond. This view is supported by a recent borderwide prefeasibility study of Texas-Mexico toll bridges (Ref 10).

Before the recent expansion of the import lot at Del Rio, Ciudad Acuña officials suggested the possibility of diverting the commercial traffic to Amistad Dam, given that the maquiladoras are located not far from Amistad on the northwest side of Ciudad Acuña. However, at this point the plan has been abandoned, and there is an initiative in Mexico to further develop its recreational area around Lake Amistad.

During interviews conducted for this project, both Del Rio and Ciudad Acuña officials indicated that it was too early to pursue a second vehicular bridge. Currently, the preferred location from Del Rio's point of view is near the Industrial Park. This accords with the preference of Ciudad Acuña, whose officials have expressed interest in a second bridge located northwest of the existing one, at a future extension of their south loop (Libramiento Sur). This location would meet Del Rio's infrastructure about 600 to 700 m south of a hypothetical extension of Johnson/Garza towards the river. This tentative location appears in Ciudad Acuña's development plan published in 1992 (Ref 1). Figure 2 shows the Del Rio/Ciudad Acuña border crossings, their main highways, and their proposed locations for two more international bridges (according to the Del Rio traffic circulation plan, which corresponds to the preferred location in Ciudad Acuña's development plan; Ref 1).

International Thoroughfares

International traffic moves almost exclusively between Del Rio and Ciudad Acuña, as indicated by sources in Del Rio and as confirmed by the origin and destination survey previously discussed (Ref 11). Peak days for shopping-related international traffic are Saturdays and Sundays. The monthly peak is on or near the first day of each month.

A considerable portion of international truck traffic is maquiladora related. According to 1994 data, there are some 45 plants in Ciudad Acuña, while anecdotal information obtained in 1995 places this number at 52 plants.[1] And forecasts regarding maquiladora trends tend to conflict. According to some sources, the labor supply at Ciudad Acuña is reaching depletion, forcing maquiladora officials to consider moving south. However, in attempting to confirm this through interviews with maquiladora managers, we found that they did not in fact have plans to move south, did not complain about labor shortages, and indicated their preference to live on the U.S. side.

As for their traffic, most maquiladoras generate two to three trucks per day. Trucks with raw materials and other maquiladora input go directly to Ciudad Acuña, while assembled goods head north, either to a warehouse or to their destination.

TxDOT has just completed the new Spur 239 connecting US 239 to US 90 at the Gibbs Street intersection. The preferred truck routes before Spur 239 was completed included US 90, US 277 (Garfield) at downtown, Avenue F, and Garza Road (near the international bridge). Spur 239 is expected to reduce traffic in the downtown area. Figure 2 depicts the international truck routes, including Spur 239.

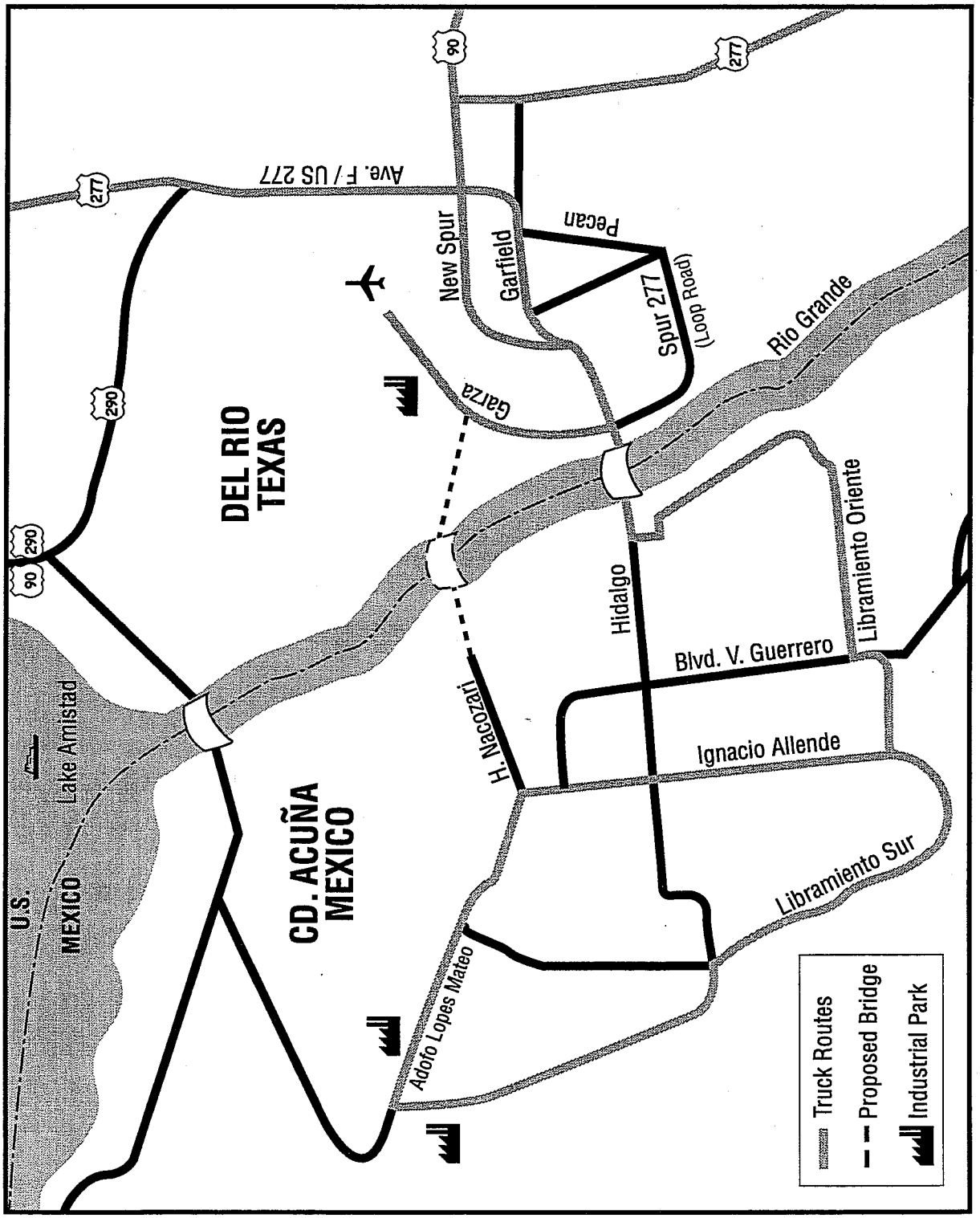

Figure 2. Existing and proposed international thoroughfares in Del Rio

The gray lines in Figure 2 indicate international routes observed during the development of this study, while solid lines indicate the recommended truck routes after Spur 239 is open. Dashed lines indicate the location of the second bridge, proposed both in Ciudad Acuña's development plan (Ref 1) and in Del Rio's traffic circulation plan (Ref 14).

Discussion and Recommendations

Again, commercial traffic growth must be interpreted cautiously, especially in terms of discrepancies between traffic directions. Origin and destination surveys conducted before NAFTA were already indicating that the percentage of non-local traffic for trucks was higher than that for autos. Yet actual origins and destinations of truck traffic at each bridge are difficult to define with reasonable accuracy (Refs 3, 10, 12, 13). Moreover, although a considerable portion of local truck traffic still reflects pre-NAFTA regulations prohibiting foreign trucks beyond the commercial zone of both the U.S. and Mexico, there is anecdotal information regarding increasing tendencies to take advantage of the more efficient new rules. Further analyses of truck traffic at the border are needed, and, again, careful monitoring of this traffic and periodical analyses are recommended.

While results of the 1994-1995 growth analyses should reflect peso devaluation effects, individuals interviewed in Del Rio and in Ciudad Acuña indicated that the peso devaluation had little effect on transborder traffic. The observed growth rates for the first four months of 1995 confirm these data, but, as indicated previously, they are based on *only* four months of data. As before, it is important keep in mind that extrapolation of early trends to the entire year may result in misleading conclusions that reflect exactly the opposite of the actual yearly growth. Because early peso devaluation impacts may later reverse themselves, further analyses are recommended for drawing confident conclusions about the peso devaluation impacts.

In Del Rio, both infrastructure expansion and real estate development are constrained by efforts to preserve the environmentally sensitive San Felipe aquifer. The San Felipe Springs, which provide between 120,000 and 350,000 cubic meters of water a day, represent the primary water source for Del Rio (Ref 6). The City of Del Rio is currently working with a consultant to identify a development plan that protects the aquifer (Ref 6). All recommendations regarding aquifer preservation have also been taken into account in the development of a Del Rio traffic circulation plan, such that new thoroughfares were not recommended within the aquifer, given their tendency to attract new development (Ref 14).

CONCLUSION

In 1994, the cities of Del Rio and Eagle Pass served an estimated 10 percent of all Texas-Mexico border traffic, which included over 8 million autos and almost 175,000 trucks, as well as nearly 34,000 international rail cars. International traffic forecasts for Del Rio, developed by CTR before NAFTA implementation, estimated the average yearly growth rates for the next 20 years to be between 1.5 percent and 3 percent, depending on the assumed post-NAFTA scenario (Ref 10). These forecasts have been exceeded according to early post-NAFTA data. International traffic forecasts for Eagle Pass, developed for CTR by Wilbur Smith and Associates before NAFTA, estimated the average yearly growth rates for the next 20 years to be between 0 and 1 percent for

vehicular traffic, again depending on the assumed post-NAFTA scenario (Ref 10). However, actual 1994 traffic growth rates were considerably higher for Eagle Pass. Auto traffic grew around 2 percent, while truck traffic grew almost 10 percent in the southbound direction, and 23 percent in the northbound direction. Because it is a relatively recent accord, NAFTA, along with its ultimate impacts on traffic demand, is proving to be an elusive socioeconomic phenomenon. And given the uncertainties in traffic projections, there is a need to develop and periodically update traffic studies focused on the border. In presenting the latest available information concerning international traffic in Del Rio and Eagle Pass, this report can assist TxDOT's ongoing efforts to implement projects based on international cooperation.

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